

Cosmetology Conference 2019: Platelet-rich Plasma Skin treatments evaluated by Confocal Laser Scanning Microscopy and other bioengineering methods

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Abstract

Introduction & Objectives:

Platelet-rich Plasma (PRP) can be defined as an analogous concentration of human platelets in small volume of plasma. This concentration contains the tropic growth factors that are released once the platelets there in are activated either by calcium chloride, thrombin, or fibrinogen. PRP has long been known as an effective treatment in various surgical and medical fields. Platelet-rich Plasma (PRP) has been shown to improve skin function parameters like skin elasticity and angiogenesis by release and degranulation of growth factors and cytokines. Platelet rich plasma can also enhance fibroblast generated elastine production and my fibroblast stimulation. PRP promotes tissue remodeling in aged skin and may used as adjuvant treatment to lasers for skin rejuvenation. Facial rejuvenation utilizing antilogous platelet growth factors, such as platelet derived growth factors, vascular endothelial growth factor, insulin like growth factor, and epidermal growth factor is natural approach to restore dermal degeneration. Quantifiable improvement of skin complexion was observed with visible changes noticeable in 3-4weeks, especially forehead, cheeks, neck, and back of hands. It is not a volumetric filler but a biological cell therapy with patients own cells and a popular relatively painless inject able treatment for the aging face in cosmetic practice. The present study uses bioengineering methods to evaluate skin specific functional parameters and collagen reestablishment and neo-synthesis by Confocal Laser Scanning Microscopy (LSCM) in a group of patients with photo aging submitted to PRP treatments during 3 months. It is great treatment for improving overall skin texture and tone. It is particularly good

for people who suffer from acne. It also induces reduction in the manifestations of skin aging by increasing number of fibroblasts and blood vessels and collagen density in the skin.

Materials & Methods: 12 patients were submitted to a PRP treatment, due to photo aging on the face. (PRP) is obtained from sample of patients (phlebotomy) .A 30cc venous blood draw will yield 3-5cc of PRP depending on the baseline platelet count of an individual and the device used.

The blood draw occurs with the addition of anticoagulant such as (citrate dextrose A) to prevent platelets activation

prior to its use. Do not chill the blood at any time before or during platelet separation and then centrifuge the blood using a soft spin and transfer the supernatant plasma containing platelets in to another sterile tube. Centrifuge tube at higher speed to obtain a platelet concentrate. The lower 1/3 is (PRP) and upper 2/3 is platelet poor plasma. There are many ways to prepare PRP. And by BUFFY COAT METHOD also we prepare (PRP). By this method white blood cells should be stored at 20 to 24 degree centigrade before centrifugation and centrifuge at high speed and three layers formed because of its density. Bottom layer consists of RBC middle layer consists of platelets and white blood cells and the top most one is PPP layer. One should remove plasma from top layer and transfer to another sterile tube and centrifuge at low speed to separate WBC. After the completion of this finally PRP preparation will be obtained to which a local anesthetic has to apply and then SC injection should be administered on the affected area, all of this should be performed at D0, D30 and D60. All the patients were evaluated for wrinkle 3D parameters, collagen quantification, and Photo aging parameters through Primos 3D, LSCM and VISIACR systems before and after each treatment. The study was photographically documented for the results evaluation, using a digital camera (lumix DMC-FX07). The photographs were taken at every treatment session (T0,T30,T60) and at one month after the last session(T90).The results were evaluated 1 month after the last session by a photograph score, a patients satisfaction score(Phss). Finally a definitive graduated score (DGS) was calculated for each patient.

Results & Discussion:

The results which were obtained using this method show a 36.6 % wrinkle reduction on both crow's feet and nasolabial fold areas. We could see results within a week after one or two months depending upon individuals, you should see rejuvenated skin that appear younger and feel softer and suppler. Results may remain from one to two years following treatment. Regarding collagen formation and reorganization, there was a 9.3 % increase in both parameters after the end of the study. The PRR and PPP smears were stained with WRIGHT-GIEMSA-SOLUTION subsequent micro examination indicated that PRP has a higher platelet concentration then PPP. The concentration of platelets in PRP was approximately 9.4-fold greater than in whole blood. Finally, results suggest a decrease in the Brown and UV spots

evaluated by VISIA-CR system. These findings suggest a neo-synthesis of collagen and other matrix components, probably due to activation and proliferation of fibroblasts that improves the skin appearance and reverts in a significant way some effects of photo aging. PRP is an analogous modification of fibrin glue which has been described and used in various applications with apparent clinical success. PRP obtained from autologous blood is used to deliver growth factors in high concentration to a region requiring augmentation. In this study, there are significant improvements in WSRS score for nasolabial folds and for facial wrinkle after PRP injection. Although PRP is one of the best procedures, it has its limitations. Most patients adapt to PRP quite well however there are few contraindications onto which we should not use this treatment.

PRP may not be the best option for

1. Pregnant women
2. People who have recently used Accutane for acne
3. People who still have the problem of active acne which may result in scarring
4. People who have pertaining skin conditions like facial eczema or rosacea
5. For people whose skin scar easily
6. For those who's wound healing history is not impressive
7. And for those who have undergone skin radiation in last 12 months.

Conclusions:

Skin improvement was observed in during the treatments. PRP is a natural approach of facial rejuvenation; it is safe and tolerable procedure. The results, particularly the collagen formation and reorganization, suggest an effect on dermis functionality that improves skin condition in photo aging patients. And the patient's satisfaction achieved will be much greater.

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